NASA Base Metadata Requirements

The ESD Base Metadata Requirements document serves as the ESD-approved implementation guidelines for metadata required in science data products. The metadata requirements in this memo are a means of assuring the consistency of metadata requirements across subsystems, and supporting the standardization necessary for system interoperability. The International Organization for Standardization (ISO) Geographic Information – Metadata standard 19115 (and related standards) shall be used to describe science data products. This standard includes two parts, 19115 and 19115-2. Part 2 and revisions to 19115 that became an International Standard during April, 2014 (19115-1), include elements that are critical for NASA collections and products. In addition, the data quality elements of 19115 have been extracted into another standard (ISO 19157). Complete descriptions of NASA collections and products will require elements from all of these standards.

These requirements are currently under review by the ESDIS Standards Office (ESO), so the requirements listed below may change pending the results of that review.

Metadata Requirements Base Reference Document (legacy)

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Definitions

The following three concepts are used to describe the metadata in this document. Although individual mission/instruments may utilize different terms for these concepts, the corresponding descriptions should all be addressed. (Note that the use of term “dataset” in NASA Earth Science Data Systems (ESDS) metadata conflicts with ISO terminology. In ISO, “dataset” means “granule”. In NASA ESDS, “dataset” means “collection”.)

- **Series (Collection) Metadata** - Metadata elements that describe an entire collection and are shared by all members of the collection. Series metadata may represent the same release of any given dataset, sets of data generated during an experiment, a campaign or an algorithm test. Metadata in this category could include discovery information (e.g. keywords, abstract, contact information), platform, instrument and sensor characteristics, and general lineage information. In some cases it is possible to have a series of another series e.g. the IPCC Climate series which is based on multiple series of data.
- **Dataset (Granule) Metadata** – A dataset is the smallest group of data that can be independently managed (e.g., described, inventoried, and retrieved), typically a file. Datasets have their own metadata and inherit attributes defined at the series level. Metadata in this category often includes spatial and temporal extent and data quality. Note that a dataset could be a physical object such as a map, report or book rather than a digital object.
- **Browse** - An image that provides a high-level view of the associated dataset/granule or series/collection metadata item. Browse do not have an independent representation or data model, but are contained within the Series or Dataset metadata.

A series may contain zero or more datasets, however datasets/granules cannot exist without being associated with a series. Browse images may be associated or included within either series or datasets.

Series Metadata Requirements

Series Metadata shall provide all fields listed in the table below.

Name	Description
MD_DataIdentification/citation/CI_Citation/title	This element specifies a name for the series/collection.
MD_DataIdentification/citation/CI_Citation/identifier/MI_Identifier	This element specifies a unique identifier for the series/collection.
MD_DataIdentification/citation/CI_Citation/edition	This element specifies the version identifier of the data series/collection
MD_DataIdentification/abstract	This element identifies the purpose and provides a description of the content of the series/collection.
MD_DataIdentification/purpose	This element provides a summary of the intentions with which the data were developed
MI_AcquisitionInformation	This entity describes the platforms associated with the acquisition of the series/collection or dataset/granule, instrument/sensor used to measure or record data and acquisition plan. Acquisition information that applies to all datasets in the series is contained in this entity.
MI_CoverageDescription	This entity describes the physical parameters being measured or calculated.

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MD_Keywords	This entity allows for the specification of Earth science keywords that are representative of the series/collection. Notably, the Platform/Instrument and Science Keyword lists are managed by the Global Change Master Directory (GCMD).
MI_Operation	This entity contains attributes describing the scientific endeavor(s) to which the series/collection is associated. Scientific endeavors include campaigns, projects, interdisciplinary science investigations, missions, field experiments, etc.
CI_ResponsibleParty	This element contains elements for describing people or organizations that are related to the data and their roles.
MD_GridSpatialRepresentation	This entity describes the spatial representation.

ed in the series table in addition to the elements listed below.

Name	Description	Standard
MI_Metadata/fileIdentifier	This element is a unique reference which identifies the metadata file.	19115:2003
DS_Series	This element holds information about series/collections that a dataset/granule is part of.	19115:2003
LE_Lineage	This entity records the data series/collection generation in detail sufficient to allow reproducibility.	19115-2
DQ_Element	This entity records the information about the quality of the data or any quality assurance procedures followed in producing the data.	19115:2003
MD_BrowseGraphic	When available, list of browse images associated with the series/collection.	19115:2003
EX_Extent	This entity describes the spatial and temporal extent of the data	19115:2003

o the required elements previously identified in this document, there are other elements of ISO 19115 that may also be required by conditional requirements. For example, the LI_Source “description” is mandatory if “sourceExtent” is not documented. There are two cases where an element can be considered to have conditional requirements:

1. Elements that are obligated as conditional in the original ISO 19115 specification.
2. Elements that are obligated as conditional based upon NASA’s Best Practices for ISO 19115.